इंटरनेट मानक

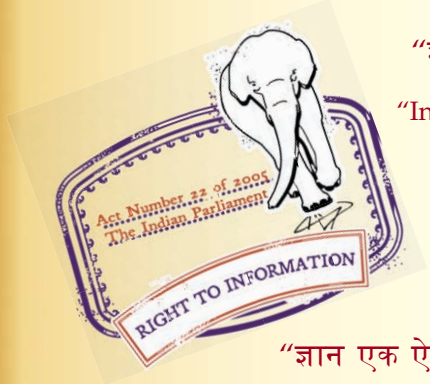
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 8679 (1978): Triangular Scales [PGD 22: Educational Instruments and Equipment]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS : 8679 - 1978
(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR TRIANGULAR SCALES

(Second Reprint MARCH 1983)

UDC 744·341·1

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *March* 1978

Indian Standard

SPECIFICATION FOR TRIANGULAR SCALES

Optical and Mathematical Instruments Sectional Committee, EDC 36

Chairman	*Representing*
DR C. S. RAO	Electro-photonics India Private Ltd, Hyderabad
Members	
SHRI MADHO RAM BHARDWAJ	Quality Marked Goods Manufacturers' Co-operative Association Ltd, Roorkee
SHRI SOM PRAKASH SHARMA (*Alternate*)	
CHIEF HYDROGRAPHER (NAVY)	Naval Headquarters
SHRI R. S. CHUGH	Survey of India, Dehra Dun
DEPUTY DIRECTOR, STANDARDS (TRACK)	Research, Designs & Standards Organization (Ministry of Railways), Lucknow
ASSISTANT DESIGN ENGINEER (TRACK) GENERAL (*Alternate*)	
SHRI P. F. GHADIALLI	The Mechanical Engineers Association (India), Bombay
SHRI M. M. GUPTA	Ministry of Defence (DGOF)
DR R. HRADAYNATH	Ministry of Defence (R & D)
SHRI M. V. RAO (*Alternate*)	
SHRI P. C. JAIN	National Physical Laboratory (CSIR), New Delhi
SHRI RAM PRASAD (*Alternate*)	
SHRI P. K. JAIN	Directorate of Industries, Government of Haryana, Chandigarh
SHRI D. D. KHOSLA (*Alternate*)	
MAJ-GEN K. L. KHOSLA	The Institution of Surveyors, New Delhi
SHRI B. R. MANKHAND	The Koh-I-Noor (India) Pvt Ltd, Varanasi
SHRI L. M. MATHUR	Development Commissioner, Small Scale Industries, New Delhi
COL MOHINDRA SINGH	Ministry of Defence (DGI)
SHRI R. N. DE (*Alternate*)	
DR M. V. R. K. MURTY	Bhabha Atomic Research Centre, Bombay
DR K. V. S. R. APPA RAO (*Alternate*)	
DR J. PRASAD	Central Scientific Instruments Organization (CSIR), Chandigarh
SHRI RAM SINGH (*Alternate*)	

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI E. B. RAJDERKAR	Raj-Der-Kar & Co, Bombay
KUMARI SUBAS RAJDERKAR (*Alternate*)	
SHRI K. N. RAMASWAMY	Directorate General of Technical Development, New Delhi
SHRI P. V. MAMMEN (*Alternate*)	
LT-COL RAMCHANDER	Ministry of Defence (EME)
CAPT S. PAUL (*Alternate*)	
SHRI C. NARAYANA RAO	The Andhra Scientific Co Ltd, Machilipatnam
DR I. RAMAKRISHNA RAO	In personal capacity (*16.3.5 Official Colony, Visakhapatnam*)
SHRI T. R. SAWHNEY	Association of Indian Engineering Industry, New Delhi
BRIG R. C. SHARMA	Directorate General of Armed Forces Medical Service, Ministry of Defence
SHRI J. K. SONEJA	All India Instrument Manufacturers' and Dealers Association, Bombay
SHRI C. L. BATRA (*Alternate*)	
SHRI P. N. THAKKAR	Federation of All India Optical Associations, New Delhi
SHRI S. L. JAIN (*Alternate* I)	
DR A. RAHMAN (*Alternate* II)	
SHRI K. G. TORGAL	The National Instruments Ltd, Calcutta
SHRI A. K. GHOSAL (*Alternate*)	
SHRI H. C. VERMA	Associated Instrument Manufacturers (India) Pvt Ltd, New Delhi
SHRI K. G. PURANG (*Alternate*)	
SHRI S. CHANDRASEKHARAN, Deputy Director (Mech Engg)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI S. P. ABBEY
Deputy Director (Mech Engg), ISI

Drawing Instruments Subcommittee, EDC 36 : 1

Convener	
MAJ-GEN K. L. KHOSLA	The Institution of Surveyors, New Delhi
Members	
SHRI D. CHATURVEDI	Quality Marking Scheme, Directorate of Industries, Kanpur (UP)
ASSISTANT DIRECTOR OF INDUSTRIES (E) (*Alternate*)	
DEPUTY DIRECTOR, STANDARDS (TRACK)	Research, Designs & Standards Organization (Ministry of Railways), Lucknow
ASSISTANT DESIGN ENGINEER (TRACK) GENERAL (*Alternate*)	
SHRI S. K. GAUTAM	Quality Marked Goods Manufacturers' Co-operative Association Ltd, Roorkee
SHRI P. L. BHARDWAJ (*Alternate*)	
SHRI S. K. GUPTA	Ministry of Defence (DGI)
SHRI G. D. BAKSHI (*Alternate*)	

(*Continued on page* 9)

Indian Standard

SPECIFICATION FOR TRIANGULAR SCALES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 18 January 1978, after the draft finalized by the Optical and Mathematical Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard deals with triangular scales, with each of the six working edges incorporating a different proportional scale, for use in engineering drawing practice.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the general and functional requirements of triangular scales.

2. MATERIAL

2.1 The material used for the scale rule shall possess toughness and shall not be affected by variations in temperature and humidity. The scales shall be of aluminium or plastic materials, such as acrylics, impact polystyrene and polyvinyl chloride in opal white shade or hard wood over which plastic sheet is cemented. The wood used shall be thoroughly seasoned and free from flaws and other imperfections.

3. GENERAL REQUIREMENTS

3.1 The scale shall be of triangular section as shown in Fig. 1.

*Rules for rounding off numerical values (*revised*).

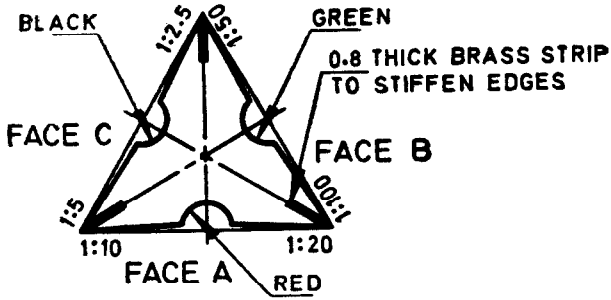


FIG. 1 TRIANGULAR SCALE SECTION

3.2 The width of each face shall be not less than 20 mm nor greater than 25 mm. The length of the scale shall not exceed 525 mm.

3.3 The three vertices of the triangular section shall form an equilateral triangle.

3.4 The scale faces shall be slightly concave in order to prevent excessive wear of the faces during use.

3.5 In the case of wooden scales, brass strips of 0·8 mm thickness shall be inserted to stiffen the edges as indicated in Fig. 1.

3.6 The curved grooves of the three faces shall be coloured as shown in Fig. 2 for quick identification of the faces.

4. FUNCTIONAL REQUIREMENTS

4.1 There shall be no warping or twisting of the scale.

4.2 The scale shall be divided by fine lines of uniform depth and thickness.

4.3 The graduations shall be at right angles to the edges of the scale rule.

4.4 The graduations and figures shall be filled in black colour to maintain legibility and indelibility.

4.5 The length of the graduating lines shall be as follows:

Main division	6 mm
Half division	4 mm
Subdivision	3 mm
Smallest division	2 mm

4.6 The height of figures shall not be less than 2·0 mm.

4.7 The opposite edges on the three faces of the triangular scale shall incorporate scales with the following ratios (*see* Fig. 1):

Face C	1 : 2·5 and 1 : 5
Face A	1 : 10 and 1 : 20
Face B	1 : 50 and 1 : 100

4.8 The scale ratio shall be marked at the corner of the starting edge of the relative scale (*see* Fig. 2).

4.9 The subdivisions and figures on the opposite edges of the three faces (*see* Fig. 2) shall be as under:

Face	*Scale Ratio*	*Value of Each Division*	*Figures*
C	1 : 2·5	2·0 mm	0, 5, 10.....125
	1 : 5	5 mm	0, 10, 20.....250
A	1 : 10	10 mm	0, 10, 20.....500
	1 : 20	20 mm	0, 50, 100.....1 000
B	1 : 50	50 mm	0, 1, 2.....25
	1 : 100	100 mm	0, 1, 2.....50

4.9.1 All the six scales shall be fully divided.

4.10 Scales 1 : 100 on Face 'B', 1 : 20 on Face 'A' and 1 : 5 on Face 'C' shall start from left hand side and scales 1 : 50, 1 : 10 and 1 : 2·5 on the opposite edges of the respective faces shall start from the opposite side.

5. FINISH

5.1 The scales made of wood shall have smooth surfaces.

5.2 The markings and graduations shall be legible and idelible.

5.3 The filling of markings and graduations shall be uniform.

6. ACCURACY

6.1 The maximum cumulative error over the entire length shall not exceed 0·25 mm, when the scales are compared against a certified metal scale. These measurements shall be made at 27 ± 2°C.

7. MARKING

7.1 The triangular scales shall be marked with the manufacturer's name or trade-mark and the year of manufacture at a suitable place.

7.1.1 The triangular scales may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8. PACKING

8.1 Each scale shall be packed in a suitably designed case.

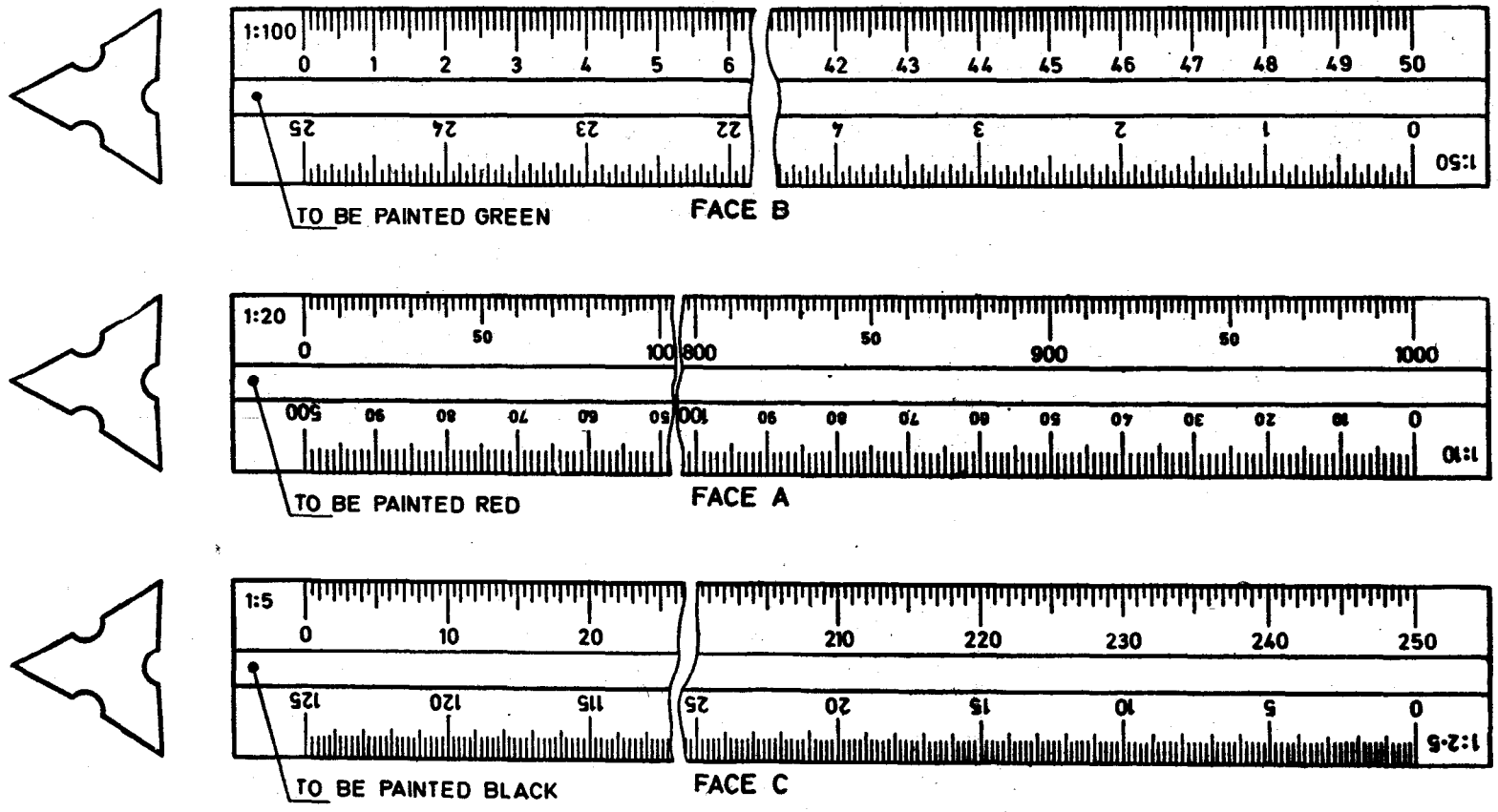


FIG. 2 TRIANGULAR SCALE MARKING

As in the Original Standard, this Page is Intentionally Left Blank

(*Continued from page* 2)

Members	*Representing*
SHRI P. C. JAIN	National Physical Laboratory (CSIR), New Delhi
SHRI B. R. MANKHAND	The Koh-I-Noor (India) Pvt Ltd, Varanasi
SHRI D. D. PURI	Central Scientific Instruments Organization (CSIR), Chandigarh
SHRI K. N. RAMASWAMY	Directorate General of Technical Development, New Delhi
SHRI P. V. MAMMEN (*Alternate*)	
LT-COL RAMCHANDER	Ministry of Defence (EME)
CAPT S. PAUL (*Alternate*)	
SHRI K. RAMA RAO	Ministry of Defence (R & D)
SHRI R. M. SOBTI (*Alternate*)	
REPRESENTATIVE	Survey of India, Dehra Dun
SHRI S. C. SHAH	Raja Bahadur Motilal Poona Mills Ltd, Pune
SHRI S. R. PITTIE (*Alternate*)	